

IN THE CLAIMS

Please amend claims 1, 15–19, 22–24, 28 and 32 and cancel claims 13, 14, 29–31, 33 and 34, as discussed below.

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A ~~dual-fuel~~ dual-fuel engine, said ~~the~~ engine ~~being~~ supplied with diesel fuel and at least one secondary fuel, said the engine ~~including~~ comprising:

one or more cylinders in which one or more pistons ~~reciprocate~~, reciprocate; ~~each of said one or more cylinders being provided with~~

diesel injection means provided to each of the one or more cylinders for injecting the diesel fuel into the cylinder during an appropriate stroke of the ~~piston~~ piston; and

at least one air inlet valve provided to each of the one or more cylinders, said ~~the~~ at least one valve moving to an open condition during said ~~the~~ appropriate stroke of the piston to permit air flow therethrough, ~~characterized in that each cylinder of the engine is further provided with~~ the method comprising:

providing secondary fuel injection means to each of the one or more cylinders for injecting the secondary fuel into the cylinders, the secondary fuel injection means being independent of the diesel fuel injection means and air inlet ~~valves~~; valves;

providing an electronic control unit (ECU) including micro-processing means for dynamically controlling one or more engine operating characteristics; and

providing vaporizing means for reducing liquid secondary fuel to gas upstream of the secondary fuel injection means to allow delivery of the secondary fuel in gaseous form to the secondary fuel injection means, wherein the vaporizing means is under the control of the ECU to allow dynamic control of delivery of the gaseous secondary fuel to the secondary fuel injection means.

2. (previously presented) An engine according to claim 1 characterized in that control of the operation of the secondary fuel injection means is independent of the operation of the diesel injection means.
3. (previously presented) An engine according to claim 1 characterized in that the secondary fuel injection means are controlled to introduce the secondary fuel in the one or more cylinders on the appropriate stroke of the piston reciprocating therein.
4. (previously presented) An engine according to claim 1 characterized in that the engine is provided with two fuel supply tanks for the diesel fuel and secondary fuel respectively, each fuel being delivered to the engine through separate supply means.
5. (previously presented) An engine according to claim 1 characterized in that injection of the secondary fuel into the one or more cylinders occurs substantially simultaneously to injection of the diesel fuel into said cylinders.
6. (previously presented) An engine according to claim 1 characterized in that means are provided for sensing and/or controlling one or more engine operating conditions.
7. (previously presented) An engine according to claim 6 characterized in that sensing means are provided for sensing any or any combination of exhaust emissions, exhaust gas particulate density, throttle position, temperature of the secondary fuel being delivered to the engine and/or the engine itself, turbo pressure, airflow velocity and pressure, secondary fuel gauge, engine speed, position of a flow control means and/or position of the diaphragm in the vaporizing means.
8. (previously presented) An engine according to claim 6 characterized in that flow control means are provided for regulating the amount of secondary fuel flowing into the engine.
9. (previously presented) An engine according to claim 8 characterized in that control of the flow of the secondary fuel to the secondary fuel injection means by said flow control means is regulated dynamically according to one or more sensed engine operating characteristics.

10. (previously presented) An engine according to claim 8 characterized in that the flow control means are provided in fuel supply pipes supplying secondary fuel to the engine.

11. (previously presented) An engine according to claim 8 characterized in that an output of the flow control means is coupled to an input of a multi-output divider for dividing a singular flow of secondary fuel into a plurality of flows, the number of flows corresponding to the number of cylinders in the engine and each of said flows being coupled to the secondary fuel injection means.

12. (previously presented) An engine according to claim 8 characterized in that the flow control means includes a piston, the position of which is changed to alter the amount of secondary fuel flowing therethrough.

13-14. (canceled)

15. (currently amended) An engine according to claim 14 1 characterized in that the ICU ECU includes ~~any or any combination~~ at least one of:

- a) one or more inputs in communication with sensing means disposed in and/or around the engine for sensing one or more operating characteristics thereof
- b) means capable of receiving and/or processing a user input
- c) calibration means through which maintenance and adjustment of one or more algorithms and/or operating parameters of the ICU ECU can be achieved
- d) one or more outputs for displaying data relating to the operating characteristics of the engine engine; and
- e) one or more outputs for connection to one or more dynamically adjustable components of the engine for dynamic control thereof during engine operation.

16. (currently amended) An engine according to claim 13 1 characterized in that the ICU ECU controls the flow of secondary fuel through a diaphragm in the vaporizing means and/or the temperature of a heating element provided therein.

17. (currently amended) An engine according to claim 8 characterized in that the ICU ECU controls both the flow control means and the diaphragm in the vaporizing means for regulating the flow of the secondary fuel through each component.
18. (currently amended) An engine according to claim 14 1 characterized in that operation of the ICU ECU is substantially continuous.
19. (currently amended) An engine according to claim 14 1 characterized in that the ICU ECU includes memory means for storing one or more pre-determined engine operating conditions therein.
20. (previously presented) An engine according to claim 19 characterized in that the memory means includes one or more algorithms which can be executed by processing means when pre-determined conditions are met.
21. (previously presented) An engine according to claim 20 characterized in that said pre-determined conditions include any or any combination of when the engine is started, when the secondary fuel runs out and/or when the load on the engine reaches a pre-determined level or is outside a pre-determined level.
22. (currently amended) An engine according to ~~a preceding~~ claim 15 characterized in that ~~the~~ calculations resulting from executing ~~said~~ the one or more algorithms are used to set the vaporizer diaphragm or piston of the flow control means to an optimum level for the detected operating conditions.
23. (currently amended) An engine according to claim 20 characterized in that at least one recalibration algorithm is provided for allowing the ICU ECU to adjust its operation as the engine and its associated component undergo wear.
24. (currently amended) An engine according to claim 19 characterized in that data input from sensing means to the ICU ECU is compared to pre-determined engine operating conditions and the ICU ECU outputs data to adjust the flow of the secondary fuel to the engine and/or one or more other engine operating parameters.
25. (previously presented) An engine according to claim 1 characterized in that a secondary fuel limiter is provided to prevent "over-powering" of the engine.

26. (previously presented) An engine according to claim 1 characterized in that emergency shut off valves are provided in fuel supply means which deliver the diesel fuel and the secondary fuel to the engine.

27. (previously presented) An engine according to claim 1 characterized in that traction control means are provided and, on detection of a loss of traction, the supply of secondary fuel to the engine is reduced or cut off.

28. (currently amended) An engine according to claim 1 characterized in that the secondary fuel is LPG, liquefied petroleum gas (LPG).

29-31. (canceled)

32. (currently amended) A method of converting a diesel engine to a ~~dual-fuel~~ dual-fuel engine, ~~said the engine being~~ supplied with diesel fuel and at least one secondary fuel, ~~said the engine provided with~~ comprising:

one or more cylinders in which one or more pistons ~~reciprocate~~ reciprocate; ~~with~~

injection means for injecting diesel fuel into the cylinder during an appropriate stroke of the ~~piston and piston; and~~

at least one air inlet valve, said valve moving to an open condition during said appropriate stroke of the piston to permit air flow therethrough, ~~characterized in that said method includes the step of providing each cylinder of the engine with~~ the method comprising:

providing secondary fuel injection means to each of the one or more cylinders for injecting the secondary fuel into the cylinders, the secondary fuel injection means being provided independently to the diesel fuel injection ~~means; means and air inlet valves;~~

providing an electronic control unit (ECU) including micro-processing means for dynamically controlling one or more engine characteristics; and

providing vaporizing means for reducing liquid secondary fuel to gas upstream of the secondary injection means to allow delivery of the secondary fuel in gaseous form to the secondary fuel injection means, the vaporizing means being

under the control of the ECU to allow dynamic control of delivery of the gaseous secondary fuel to the secondary fuel injection means.

33-34. (canceled)